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AUTHOR Breno, Patricia M.
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ABSTRACT

This paper reports on a research project that evaluates the impact of OhioLINK's resource sharing options upon traditional interlibrary loan services and organization. This impact is documented by a study of the interlibrary loan transactions processed by the Interlibrary Loan Department, Carlson Library, University of Toledo, before and after OhioLINK membership. Statistics were tracked over 9 years. Specific issues addressed are number of requests processed; total number of loans compared to total number of photocopy requests processed; total number of transactions between OhioLINK member libraries and non-OhioLINK member libraries; and the type of library generating and filing transactions. Analysis of the data revealed that the total number of requests processed has not decreased significantly. While decreases were noticed in tracking the requests processed, it is clear that OhioLINK's resource sharing options have not eliminated or lessened the workflow of the Interlibrary Loan Departments at the Carlson Library, University of Toledo. Contains 14 tables of data. (Author/DLS)

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ED 423 901

IMPACT OF OHIOLINK RESOURCE SHARING OPTIONS ON THE WORKLOAD OF THE INTERLIBRARY LOAN DEPARTMENT AT THE UNIVERSITY OF TOLEDO, CARLSON LIBRARY

A Master's Research Paper submitted to the
Kent State University School of Library
and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Patricia M. Breno

June, 1998

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U.S. DEPARTMENT OF EDUCATION
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Abstract

The opinion of several OhioLINK colleagues, as documented in the literature review, is that traditional interlibrary loan will become obsolete as OhioLINK's resource sharing options improve, increase and replace its inefficient methods of document retrieval and delivery. This research project evaluates the impact of OhioLINK's resource sharing options upon traditional interlibrary loan services and organization. This impact is documented by a study of the interlibrary loan transactions processed by the Interlibrary Loan Department, Carlson Library, University of Toledo before and after OhioLINK membership. Statistics were tracked over nine years to determine if membership in OhioLINK has impacted the workload or the number of transactions processed by the department. Specific issues addressed are the total number of requests processed, the total number of loans compared to the total number of photocopy requests processed, and the total number of transactions between OhioLINK member libraries and non-OhioLINK member libraries, and the type of library generating and filling transactions.

An analysis of the data revealed that the total number of requests processed have not decreased significantly. Photocopy transactions increased and loan transactions decreased, but the total transactions processed reflect a .25% decrease over nine years. Ohio borrower statistics show an increase in photocopy transactions, with OhioLINK libraries growing from 22.7% to 80.3% of the total photocopy transactions for the years studied. Although the total Ohio loan transactions decrease, the percentage of OhioLINK loan requests increase 12%--even with the benefits of patron initiated circulation. The Ohio lender statistics reflect increases in both loans (10.6%) and photocopies (64.5%) for transactions with OhioLINK libraries. The majority of all transactions are with academic libraries, followed by special libraries, with public libraries a distant third. Library type transactions have remained constant, with noticeable increases in borrower and lender photocopy transactions for academic libraries. Non-Ohio borrowing and lending increased in both loan and photocopy transactions. While decreases were noted in tracking the requests processed, it is clear that OhioLINK's resource sharing options have not eliminated or lessened the workflow of the Interlibrary Loan Department at the Carlson Library, University of Toledo.

Master's Research Paper by

Patricia M. Breno

B.A., University of Toledo, 1978

M.L.S., Kent State University, 1998

Approved by

Advisor [signature] Date 7/8/98

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I. The Problem Statement

Background

In August 1994, the University of Toledo switched automated library systems—from NOTIS to Innovative—as part of its responsibilities as a member of the OhioLINK consortium. A process known as patron initiated circulation (called pcirc by the OhioLINK members) was implemented in January 1995. Pcirc allows valid OhioLINK library users to request materials from other member libraries through a series of menu prompts from the OhioLINK central catalog. From its implementation, pcirc has been touted as a replacement for the interlibrary loan department—by members of the Circulation Department at Carlson Library, and through inferences made in the literature written by colleagues at other OhioLINK member libraries. These inferences have fueled the desire to research the impact of OhioLINK upon the Interlibrary Loan Department at the University of Toledo (UT).

OhioLINK offers a multitude of services to member libraries and their users apart from pcirc such as online research databases, electronic journals, and Power Pages—a service which allows users to route full text articles to their personal fax machines at no cost, or for a minimal cost, route to their home library's fax machine. These services impact interlibrary loan as patrons may access and retrieve resources without the intermediary services of the interlibrary loan department. In addition, the research databases provide easy access to a multitude of resources outside of the local collection and outside of the OhioLINK catalog collection. Users needing more than access to the citation will request the services of the interlibrary loan department to retrieve the actual document. To separate the impact on interlibrary loan of one OhioLINK service from another would be a challenging task—and one too broad for this study.

Objectives

This study will focus on the impact of OhioLINK on the workload of the interlibrary loan department. It is hoped to learn whether the proponents of the end of interlibrary loan are correct—will it continue to serve as a library function? Statistics of incoming and outgoing requests will be studied to determine if the workload has decreased since UT became a part of

pcirc, to determine if transactions are only between non-OhioLINK libraries and UT, and to determine if there has been a change in the type of materials requested—more loans or more photocopies.

Glossary

consortium — A consortium is a group of libraries which has formed a partnership or association for resource sharing and the general improvement of services to its users.

ILL or interlibrary loan — The function of the library which provides access to materials not owned by the library to its users. In addition, it is the function of the library which provides access to materials which other libraries may not own, so that these other libraries may fill information needs of their users.

Innopac — Innopac is the name of an integrated library software application. It allows for automation of functions relating to the Acquisitions, Serials, Cataloging, Circulation departments as well as library administration and the maintenance/creation of the online library catalog. Available in text and web based formats, it is a flexible, user oriented system.

Innovative Interfaces Inc. — Also known as III, or "triple I," it is the company which created, markets, and supports Innopac software. It is a menu driven, user friendly system, available in character and web based versions.

Network — For the purposes of this paper, a network is considered the same as a consortium. It is a group of libraries joined for some common goal or purpose, usually resource sharing, for the benefit of all member libraries.

NOTIS — The first automated, integrated library software system implemented at the University of Toledo. It is a mainframe, command driven system, which automated the functions of cataloging, circulation and created the first online catalog at the University of Toledo. It is character based, and a product of Northwestern University.

OCLC — OCLC is an acronym rarely defined, and so much a part of library lingo that even the seasoned veteran must stop and think what it spells out. In the beginning, OCLC stood for Ohio College Library Center, and was a homegrown product from Columbus, Ohio. It quickly became a large union database—a collection of MARC bibliographic records to which holding symbols were linked, indicating what library ownership. In addition to its use as a cataloging utility, it provides a subsystem for interlibrary loan, the union serials list, reference, product services (reports, macros, etc.), and WorldCat which is a "user friendly" version of the online union catalog for public use. OCLC now stands for Online Computer Library Center. With Passport for Windows as communication and navigational links to OCLC, it is a powerful resource for librarianship.

OhioLINK The Ohio Library and Information Network, OhioLINK is a consortium of Ohio private and public academic libraries, joined by the State Library of Ohio, to create one central catalog whereby users can search all libraries' holdings at once. OhioLINK offers its members a multitude of research databases, access to full text articles, electronic journals, and patron initiated circulation—an unmediated interlibrary loan system. OhioLINK utilizes Innopac software, and all member libraries must agree to its implementation, and to the restrictions of codes and usage documented by membership agreement.

Pcirc Pcirc is patron initiated circulation. What this means is that a series of menu prompts allow library users or patrons to request that a book from another library be sent to them and be picked up at their "home" library. At the present time, pcirc covers only materials which can be loaned—no photocopies of articles are processed via pcirc. The menu prompts request validation of the user—some form of identification must be provided to establish that the user is legitimately connected to an OhioLINK member institution and that he/she has no encumbrances at the home institution.

UT University of Toledo. In most cases, specifically, the Carlson Library at the University of Toledo. Other libraries associated with UT are the Law Library, Scott Park Learning Resource Center, and the Ward M. Canaday Center.

UTMOST This is the name of the online catalog at the University of Toledo. At the present time, it is available in text and web versions. The summer and fall of 1998 will see a demise of the text version, as all public workstations will be replaced with the WebPAC or web version of the online catalog.

II. Literature Review

Interlibrary Loan has experienced a revolution since the arrival of the OCLC Interlibrary Loan Subsystem in 1979. Fed by technological advancements in online, CD-ROM, and electronic databases, with the availability of full text journals online and patron initiated circulation features of integrated automated networks, the number of requests passing in and out of the Interlibrary Loan Department has been impacted in both positive and negative ways. Some in librarianship are reporting a demise of Interlibrary Loan or an evolution from the interlibrary loan concept to simply document delivery services. Will the Interlibrary Loan Librarian's intermediary function become extinct, or will it become specialized in dealing with problematic citations or requests? Has technology put interlibrary loan out of business? To deal with this type of question, what is impacting interlibrary loan, its staff and patrons, and how services are affected must be studied.

Scope of the Literature Review

The topic of study is the impact of OhioLINK upon the workload of the Interlibrary Loan Department at the University of Toledo's Carlson Library. To research available literature in this area, two categories were identified: materials related to a library network or consortium and materials related to the functions of interlibrary loan. These broad categories were then narrowed in scope: academic libraries for the networks and materials which documented any sort of impact on the functions of traditional interlibrary loan activities. While the topic of the research may be considered a case study, it was hoped that articles could be located which reported on documented research performed on the impact of some part of the network on interlibrary loan or other function of the library which may relate to the study under consideration.

Search Results

The literature located on the topic of interlibrary loan focuses on issues such as access versus ownership, collection development uses of interlibrary loan statistics, document delivery turnaround time studies, user satisfaction studies or how specific software or automated systems have altered the processing of interlibrary loan requests. Articles on impact of increased workload on interlibrary loan staff or how membership in a network has impacted interlibrary loan

were not easy to locate. Research data other than system generated statistics or locally documented "counts" was also difficult to find.

Library Networks or Consortiums

The popularity and growth of statewide library networks or consortiums is well documented in the literature. Unfortunately, most articles deal with descriptions or history of the organization—what it is, has done, and will do. Studies or evaluations of the networks were difficult to find. Evaluations are particularly important to determine if the organization is fulfilling its purpose, is moving in the right direction to meet its goals, and is identifying what needs to be improved or what may be necessary to eliminate. Empirically assessing services gives credence to the claims of success in services offered by a network. This is sadly lacking in the literature.

It was hoped to locate materials which documented any impact, increase or decrease, on interlibrary loan due to its inclusion in a library network. This would include any documented network influence such as local/regional borrowing-lending ratios, any variables impacting workload or the actual number of requests processed, or even document delivery time.

OhioLINK

What was located were descriptive articles about OhioLINK: what it is, how it operates and what it plans to do. Two articles specifically mentioned its impact on interlibrary loan—both written by members of Access Services, King Library, Miami University. The first article clearly expressed the opinion that interlibrary loan would be replaced by OhioLINK services, "The availability of inter-institutional lending shifted a significant portion of patron borrowing out of the interlibrary loan office and into the OhioLINK inter-institutional lending service."[1] To document this statement, the authors do not provide any statistical evidence, no tables or charts which separate interlibrary loan requests from OhioLINK requests. They only state statistics of OhioLINK requests, and use charts which are passed out at every general pcirc meeting to member libraries on usage statistics. The authors do state that there has been an increase of "85 percent in overall interlibrary loan activity (traditional ILL plus OhioLINK inter-institutional

[1] Judith A. Sessions, et al. "OhioLINK inter-institutional lending online: the Miami University experience," *Library Hi Tech*, 13, no. 3 (1995):21.

lending)" but does not provide any data on how this number was calculated or what portion of the 85 percent is traditional interlibrary loan activity.[2]

Two years later, the second article appears—it is more research oriented and focuses specifically on the impact of OhioLINK on traditional interlibrary loan. The authors stated that interlibrary loan requests for loaned items will decrease due to pcirc processing of materials, but that photocopy requests will dominate, creating a document delivery department from a traditional interlibrary loan department. The authors cite statistics, through the use of tables, charts and graphs, which support their claims that interlibrary loan now represents a fraction of overall borrowing and lending and that the only growth in interlibrary loan has been in photocopy requests.[3] While the evidence presented is overwhelming, there is no indication by the authors of the methodology of collecting the data presented. Where did the numbers come from and if a reader wanted to replicate the research, how would it be done? The authors provide an overview or historical background prior to launching into the conclusions of the data presented, but they do not provide methodology which makes one question the validity of the data. This is particularly troublesome if the data is sound and compromises the efforts of the authors.

Interlibrary Loan: Obsolete or Metamorphosis

Other OhioLINK articles echo the sentiment that interlibrary loan will become obsolete: Dunn of Cincinnati states that pcirc will "circumvent the inefficient method of interlibrary loan."[4] It is interesting to note that one article explains that the impact of the cooperative sharing efforts of pcirc have created an increase in processing work for staff in each library, and that no provisions for reimbursement or increase in staffing have been made. OhioLINK's solution for the increase in workload due to pcirc requesting has been to purchase 3-M self check out stations for member libraries.[5] It is an interesting solution that a self check out station will reduce the workload for staff. The station cannot retrieve materials or bag them for shipment. At the Carlson Library,

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[2] Ibid.
[3] Scott Van Dam, et al. "The Impact of the OhioLINK network on traditional interlibrary loan," *Journal of interlibrary loan, document delivery & information supply*, 8, no. 1 (1997):3.
[4] Dana Dunn. "Libraries of tomorrow: University of Cincinnati," *Computers in Libraries*, 13 (January 1993):15.
[5] Arnold Hirshon. "Library strategic alliances and the digital library in the 1990s: the OhioLINK experience," *The Journal of Academic Librarianship*, 21 (Sept. 1995):385.

University of Toledo, the self check out station was installed, with the explanation that it would relieve one staff member from circulation responsibilities, and enable that person to concentrate on pcirc duties. The statistics generated from Innovative for terminal 156 (the self checkout station) indicate that from January 1997-January 1998, only 1.3% of library materials were checked out at that location. That translates into 7475 checkouts from a total of 281,171. Not a productive solution for the impact of OhioLINK on circulation staff, and one wonders what the other OhioLINK libraries self check out stations have done to relieve staff workload.

Of the five articles on OhioLINK, only two included charts, tables or graphs reflecting statistical results. Of these two, one used the tables which OhioLINK supplies to member libraries at General Pcirc Meetings (held twice a year). The authors of the second article also used statistics from OhioLINK, as well as those generated from OCLC and their local Innovative system. The second article does not credit nor explain the source of the statistics—this reader recognized them for what they were because generating them or data from them is part of the reader's job responsibilities. These reports are generated either from OCLC or the local Innovative system upon request, with criteria set by the operator. OhioLINK pcirc data is password protected and may be downloaded from the web by library staff.

Interlibrary Loan

Eighteen articles associated with interlibrary loan were located which were considered relevant to the study topic. Nine contained no reports of research data to support the text, and were descriptive essays. It was discouraging to find articles with subtitles "a case study" which dealt with impact on libraries' resource sharing, but simply reported numbers or percentages of activity without explanation of how these were determined. In the nine articles which did contain data in graphs, tables, or charts, six used questionnaires or surveys, one reported on local library statistics, one used OCLC generated statistics, and one used data obtained from Federal Express, a delivery or courier service. One of the articles used a detailed model to represent

costs of a new local loan system. This article included many math symbols and equations which were difficult to follow.[6]

Issues Impacting Interlibrary Loan

The topics covered in the interlibrary loan articles were generally concerned with electronic impact, impacts of document delivery services or options, and studies on customer satisfaction. Paine and Ward's article on changing workloads was an interesting study of staff to transaction ratios and staff to fill rate ratios. It concentrated on the impact of technology developments and document delivery services—both reoccurring themes in the literature available on interlibrary loan.

The lack of published research on the large state networks or consortiums, i.e. Galileo, was discouraging and frustrating. Articles focused on what the networks were providing and how it was being done. One article on MSUS/PALS was lengthy and detailed a variety of aspects associated with the network: serials, circulation, acquisitions, interlibrary loan, collection development.[7] It was entirely a descriptive work on the what, where and how of the network. The same article contained two sidebars, whose titles indicated they might be useful: "How Pals Interlibrary Loan Impacts an Interlibrary Loan Department" and "How PALS Interlibrary Loan Impacts an Interlibrary Loan Center." The first sidebar reported on the positive impact of automated interlibrary loan processes, standardization of procedures, of hardware and software used. The second sidebar discussed the impact of PALS on MINITEX through the evolution of paper to electronic housekeeping, statistical uses, the need for extensive training due to ever increasing complex automated systems, and that all activities have become dependent upon such systems.

Two articles by Medina about NAAL (Network of Alabama Academic Libraries) came the closest in comparison to the Miami University studies on impact of a network on interlibrary loan. In the first article, Medina studies document delivery, fax transmissions, and preferential treatment to member libraries. The second article considers the escalating requests, migration

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[6] A.F.MacDougall et al. "Effectiveness of a Local Inter-Loan System for Five Academic Libraries: An Operational Research Approach," *Journal of Documentation*, 46 (1990):354-355.

to integrated automated library systems, interlibrary loan software such as SAVEIT, financial constraints which accompany shrinking academic library budgets compounded by the increase in requests for materials (staff time, handling, and shipping costs), as well as the importance of building affinity groups and service priorities within the network or consortium.

KICNET, Kansas Interlibrary Communications Network, utilized an automated email system to send requests and responses which has impacted procedures and costs, as it proved to be much less expensive than OCLC. KICNET allows transactions to occur outside of library hours with unattended features. It also required little staff training or maintenance. KICNET is administered by the Kansas State Library, but it was unclear from reading the article whether it was academic libraries, or a mixture of public, academic, and special libraries which composed the network.

OPLIN, the Ontario Public Library Information Network, established in 1985, encompassed the area in Ontario, Canada from Niagara to Toronto. This network used two separate systems for interlibrary loan: UTLAS REFCATS for print materials and CNCP's electronic mail system, Dialcom, for 16mm films. The article documents the impact of the automated systems and new procedures impacting traditional interlibrary loan activities. Once again, statistics were provided without any background or validation, "The costs for print ILL were reduced by 5 percent ... the costs for film ILL were reduced by 23 percent."[8]

Future Concerns

The article by Cornish provides two warnings for networks: they may antagonize those outside the network who cannot participate for whatever reason and that networks may become self-protecting and actively decline to cooperate in the wider library community.[9] Cornish also prefers to refer to interlibrary loan as document delivery because technology and change have altered it so that copies are more important than loans and many non-library suppliers are included—commercial document delivery services—so that it is no longer an "interlibrary"

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[7] Michael S. Barnett, et al. "MSUS/PALS: Building a Regional Information Infrastructure," *Library Hi Tech*, 12, no. 1 (1994):7.
[8] Bonnie Campbell. "OPLIN: The Ontario Public Library Information Network," *Canadian Library Journal*, 45, no. 5 (1988):279.

process. Cornish sees the impact of the library network as changing the role of the "document supply librarian" from an intermediary between libraries to an "interpreter of the plethora of information sources available through the network."[10]

Methodology of the Literature Review

The literature which provided research documentation used surveys or questionnaires overwhelmingly as the methodology. Articles were selected using *Library Literature*, *ERIC*, *Education Index*, *ABI-Inform*, and *Periodical Abstracts*. Topics were selected which dealt with networks, consortiums, any sort of impact (increase/decrease) on the interlibrary loan function, and the articles written within the last five to ten years were preferred, with one or two exceptions. Currency was an issue which had hoped to pull out the most recent developments of networks and impacts on their member libraries. While not locating any parallel articles to the Miami University works, the literature search revealed that there are many statewide networks, but few have research their services and impact on member libraries—or at least published that research. The literature on interlibrary loan studies reveal ever increasing workloads, acceptance and reliance on automated, integrated library systems, that staffing levels have not increased with the workload, and that patrons want requests filled quickly at little or no cost to themselves. This has revealed the need to study the impact of the OhioLINK network on interlibrary loan workload at the University of Toledo's Carlson Library. To evaluate effectiveness of the network, it must be studied and assessed in some objective method. This will be accomplished through statistics supplied by OCLC on lending and borrowing activity of the Carlson Library, through generating circulation statistical reports from the Innopac system at the Carlson Library, and through accessing OhioLINK pcirc transaction statistics via the web.

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[9] Graham P. Cornish. "The Impact of Networking on International Interlibrary Loan and Document Supply," *Libri*, 41 (1991):282.
[10] Ibid., p. 288.

III. Methodology

The methodology to be used in this study will be an ex post facto study. The data already exists, and an attempt will be made to discover if some cause and effect relationship may be determined. The OCLC ILL Management Statistics Service Request Reports will be utilized to determine workload activity for the time period of July 1997-May 1998. In addition, OCLC borrowing and lending activity reports will be utilized to study fiscal years 1989/90 through 1996/97. The local Innopac system has limited capabilities of tracking OhioLINK materials coming in and leaving the building. An OhioLINK library must trust the statistics provided by OhioLINK officials in Columbus, and this study must take on that same trust. OhioLINK dates of site installation will be the considered date of membership. A member need not have its database loaded into the central catalog to receive the benefits of free loans, photocopies, and use of the Pony Express package courier service. Thus, a member need not yet have activated pcirc to impact the interlibrary loan department activity.

OCLC Reports

The OCLC ILL Management Statistics Service Request Reports have data from the OCLC interlibrary loan request form transposed into 39 columns. Each request, whether filled or not, whether photocopy or loan, is represented. Some fields do not display data if the operator did not enter a value, i.e. department name or status of the patron: faculty, staff, student, other. This is problematic for future use of the reports, and some standardization must be implemented on the minimum level of data input in each interlibrary loan request form.

These reports are downloaded from the OCLC website via the use of an OCLC authorization number and password. They are loaded as Excel files—as a spreadsheet application, then imported into Access, a database application, for manipulation and report generation. Either of these applications allow reports to be generated from the data, such as number of Ohio libraries requesting materials of UT or number of photocopies or loans requested by Ohio libraries. The borrowing and lending activities are separated into two reports by OCLC—and each report is

imported into Access separately, i.e. July 1997 has two reports: one lending data, one borrowing data.

The older reports to be studied are also separated by borrowing and lending activities. These reports were generated from information gleamed when staff created interlibrary loan requests and answered interlibrary loan requests. OCLC generated a paper print out of the data and sent it to the institution. These print outs included total requests filled for loans and photocopy, average turnaround time, and total number of transactions. Only institutions and states with over 100 transactions are identified in the breakdowns—but are included in the total number of transactions processed. A breakdown of each institution borrowing or lending is provided for Ohio and Michigan, both in number of transactions and percentage of the total transactions. For other states and countries, only the total number and percentage of the total transactions are provided.

The Sample

The sample to be studied from these reports will first be defined by scope. To develop a statistical background of the workload (transactions) of the Interlibrary Loan Department at UT, the sample will begin with the fiscal year 1989/90 and continue until the end of May 1998.[11] The fiscal year begins July 1 and ends June 30 of the following year. In addition to time frame, the scope will include identification of the institution generating the request of UT and identification of the institution which filled the request by UT: Ohio or non-Ohio, OhioLINK member or non-OhioLINK member, and academic or non-academic library. It is hoped from these divisions to have a better understanding of the working relationships of the interlibrary loan department with outside institutions.

The sample content to be studied is the total number of photocopy and loan requests by UT and from UT, the total number of requests by Ohio libraries, the total number of requests by

[11] Due to administrative deadlines for graduation, the last month of the current fiscal year will not be included in this version of the study. A version of this study to be submitted for publication will include the entire 1997/98 fiscal year.

OhioLINK libraries, with breakdowns of loan/photocopy, and the total number of requests from academic versus non-academic libraries—and of these, a comparison of the Ohio versus non-Ohio institutions.

IV. Data Analysis

These four main areas will be examined to see the impact on the amount of requests on interlibrary loan from 1989/90 to 1997/98. If the OhioLINK officials and the Access Services staff at Miami University are correct, then the results should reveal a decline in loans to and from OhioLINK member libraries and an increase in the amount of photocopy requests from and to OhioLINK libraries. The ability to view detailed holding information displayed in the OhioLINK central catalog may impact the number of photocopy requests of UT. Libraries who do not have OCLC, do not have access to view Union List data, or may require additional information which the Union List function cannot provide, may still use the central catalog to view detailed holdings information for each OhioLINK member library. Even OhioLINK libraries requiring more holdings information than OCLC can provide, may use the central catalog as a source for specific institution holdings and OCLC control number—to make use of OCLC more efficient. The data can then be transformed into a request via OCLC, mail, fax, phone, etc.

Methodology of the Analysis

The total numbers pulled from the statistical reports will be collected into Excel spreadsheets and tabulated for averages, percentages and sums of the totals. From these collective statistics, it is hoped to view a pattern of decreasing or increasing numbers of transactions between UT and other OhioLINK member libraries. By documenting the evolution of the department's transaction workload, it is hoped to provide data to better focus the efforts of the department personnel, possibly consider realignment of job duties and responsibilities, and also to provide documentation to the administration that the increase in workload may justify the expense of more staff or technological innovations such as electronic request forms, copyright compliance software, or invoicing software which integrate with local applications as well as OCLC. Even if the documentation is not successful in marketing change, it will supply evidence to the administration as to why and how the department is spending its resources.

Summary

The concept of networking and cooperative resource sharing is not an innovative response to the needs of libraries and their users, as cited in literature more than twenty years ago. It was apparent from the literature review completed, that collecting data and reporting it are not a common occurrence for the statewide library networks or other large library consortiums. Networks spend a great deal of time and effort providing services to their members, they also need to provide more research on the impact of these services on their members and users.

Historical Background

In 1994, the University of Toledo became a member of OhioLINK and converted from the NOTIS integrated automated library system to Innopac, a product of Innovative Interfaces Incorporated (III). Cataloging and the OPAC (online public access catalog) switched from NOTIS to III in July 1994, with Circulation following the next month. Both Serials and Acquisitions had automated in 1985 with INNOVACQ, an earlier version of the Innopac system. The Serials and Acquisitions modules never converted to NOTIS, and they were upgraded from INNOVACQ to Innopac in August 1994.

January 1995 brought the most dramatic change in the University Libraries' automation history with the implementation of the OhioLINK function, patron initiated circulation or "pcirc." OhioLINK member libraries implement pcirc after their holdings have been added to the OhioLINK central catalog. Pcirc allows authorized patrons at OhioLINK libraries to initiate requests for loans from other OhioLINK libraries—without the services of a library intermediary such as an interlibrary loan staff member or without filling out an electronic or paper interlibrary loan form. The system utilizes menu prompts to guide the patron through the steps to request that located materials be sent to that individual's library for pick up. Pcirc transactions are processed through the Circulation module and have brought to it the interlibrary loan functions of processing, locating, and mailing materials requested by OhioLINK patrons.

OhioLINK has implemented other services which have impacted traditional interlibrary loan. One of these services is Power Pages, which allows patrons to search designated research databases, locate desired articles and to have the full text of the articles print at the patron's

library or at the patron's home/office fax machine. It is another "intermediary" function which traditional interlibrary loan staff once held sole proprietorship and now is sharing which the library patron. Other services which impact the number of requests for photocopy articles are the electronic journals available through OhioLINK and the large number of research databases which allow easy searching and retrieval of useful citations. Access to full text articles in electronic journals eliminates the need for interlibrary loan to request articles from those journals from other libraries—and allows the patron immediate access to needed information. Access to an increasing number of online databases offered through OhioLINK provides increasing numbers of citations to the student, faculty or staff member which in turn may increase the number of requests for journal articles—and loans, for materials which the local library or OhioLINK libraries may not hold. The convenience of quick, flexible search methods offered in the online databases also allows the library patron more access opportunities to local relevant information in the database than the traditional print resource, i.e. Boolean searches, limiting by date, language, publisher, type of article, etc.

OhioLINK Impacts Circulation

These functions which OhioLINK has implemented and which are offered to valid users at OhioLINK institutions have had tremendous impact on the Circulation and Interlibrary Loan Departments. Circulation has had to bear the heaviest load of change, as the III system coded the pcirc functions within the Circulation module. Power Pages has also been placed with the responsibility of the Circulation Department, both physically, and responsibly as charges are often tabulated automatically into the patron record when requests are made. Circulation must also handle the collection of the articles from the Power Pages printers, the distribution to the patrons, and the front line trouble shooting when problems arise with the process—and with the pcirc process.

If Circulation has been given added duties and responsibilities, how has this impacted the Interlibrary Loan Department at the University of Toledo? In the beginning months of pcirc, the Circ staff members believed that they would take over Interlibrary Loan—that the services of traditional interlibrary loan would no longer be necessary once patrons were educated about pcirc

and Power Pages. Staff at the University of Miami, one of the first OhioLINK libraries, also stated the same opinion in two published articles on OhioLINK and its impact on member libraries and users.

Statistics Issues

The impact of OhioLINK upon the services of traditional interlibrary loan at the University of Toledo will be examined by dissecting the statistics collected by the department and by OCLC over the past eight years. A few problems were encountered in evaluating the data collected. The first problem was that while the Technical Services Director had files of OCLC statistics from the past, the fiscal year 1993/94 was missing. The original reports from OCLC could not be located, and the numbers presented in the following tables for that year were taken from departmental documentation created from the reports. A second problem was in the format of the reports. The older reports were available only in print version, and had to be tabulated manually. In addition, they did not contain the depth of information found in the electronic reports issued by OCLC beginning in July 1997. Trying to consolidate the data to maintain its integrity and validity was both time consuming and frustrating. In addition, even with the electronic reports, some of the data needed for the research was not available within the report and had to be manually located and tabulated, i.e. identification of library as an OhioLINK member. Another aspect of the local statistics and of the electronic reports, was that they included unfilled or incomplete transactions—but did not specify what type of request the transaction was, copy or loan. Because the print reports did not include unfilled transactions, unless otherwise specified, the tables will include only the transactions for filled requests of UT and by UT.

Results

The first figures to be discussed at the total number of transactions which the Interlibrary Loan Department processed each year. Table 1 reveals that the total interlibrary loan transactions have decreased since 1994/95. It should be understood that this fiscal year is strategic, as pcirc was implemented in January 1995. The total transactions drop can directly be attributed to pcirc as seen in the decrease in loan transactions since 1994/95. The number of

photocopy transactions has remained consistent, showing a very slight decrease overall. The 1997/98 statistics lack figures for June 1998, which when included, will undoubtedly reveal an increase in transactions from the previous fiscal year.

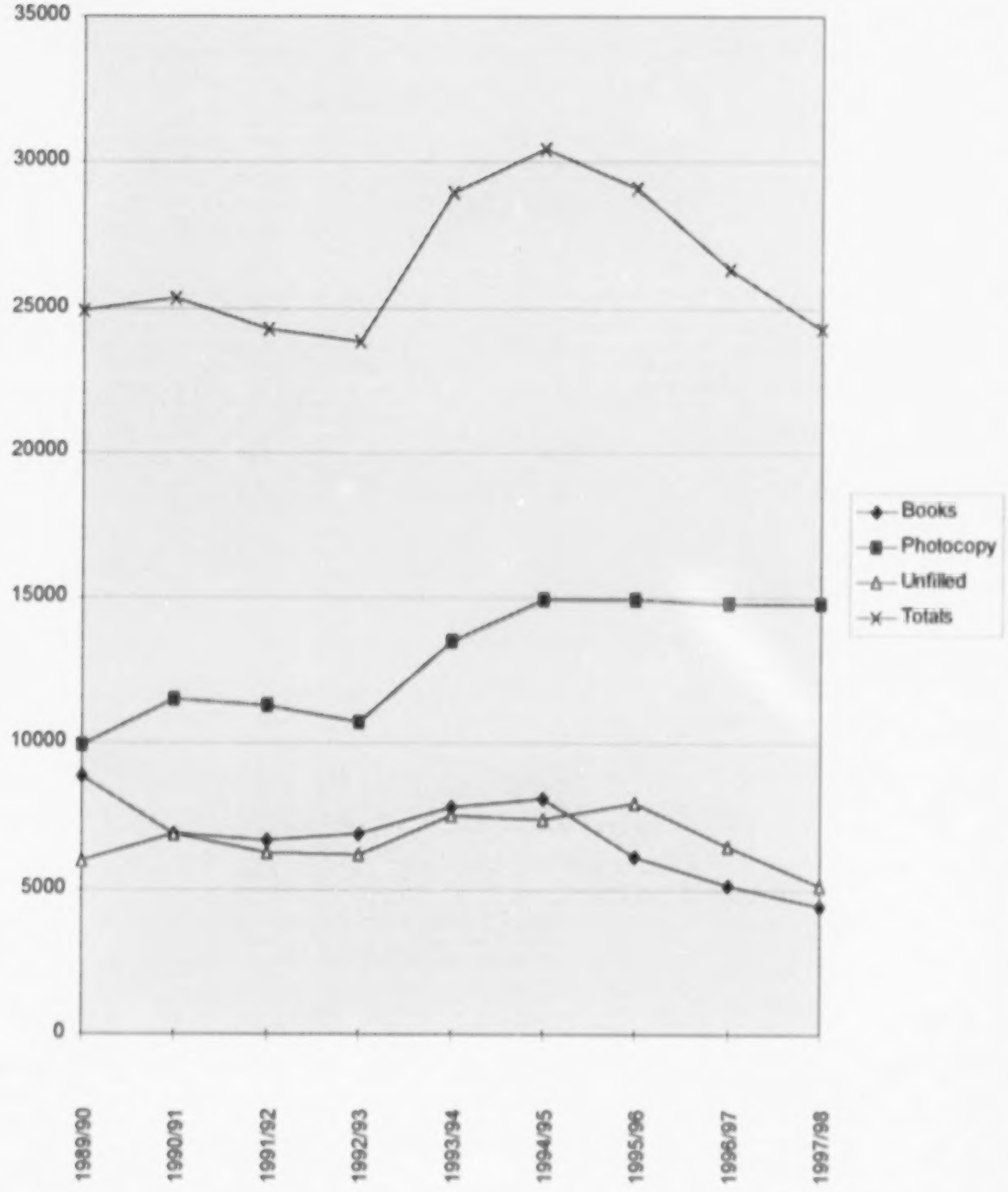
Table 1. Total Interlibrary Loan Transactions Handled by the Interlibrary Loan Dept.

	Books	Photocopy	Unfilled	Totals
1989/90	8914	9945	6004	24,863
1990/91	6934	11,523	6895	25,352
1991/92	6660	11,318	6289	24,267
1992/93	6912	10,714	6187	23,813
1993/94	7850	13,535	7558	28,943
1994/95	8081	14,921	7423	30,425
1995/96	6150	14,932	7999	29,081
1996/97	5092	14,818	6443	26,353
1997/98*	4386	14,786	5097	24,269
Totals	60,979	116,492	59,895	237,366

*1997/98 statistics include July 1997 through May 1998.

The results of Table 1 are not surprising when it is understood that loans previously requested through interlibrary loan and the OCLC Interlibrary Loan Subsystem from 1989/90 through December 1994 are now being requested by library patrons directly using computers in their homes, dormitories, offices or the University Libraries. Loan transactions decreased from 8914 to 4386 representing a 50.7% drop in transactions. Superficially, this would appear to demonstrate the demise of one of the functions of traditional interlibrary loan services—that of obtaining books for patrons. If the total numbers of transactions, including unfilled, are studied, highs and lows wave up and down through the years, but the difference between 1989/90 and 1997/98 is only 594 requests or .25% of the total transactions in that time period: 237,366. Since Power Pages has a limited number of full text articles available, and OhioLINK has only recently offered access to electronic journals within the past year, it is also not surprising that copy requests have not decreased during the years studied. In addition, the availability of online research databases through OhioLINK provides more opportunities to locate informational needs as the numbers of databases available increase—and the efficiency and flexibility found in menu driven, user oriented interfaces allow patrons to find more materials than searching old print volumes one at a time. Overall photocopy requests have shown a 32.7% increase, rising from 9945 to 14,786 transactions.

ILL Transactions 1989/90-1997/98



While data on the unfilled requests did not distinguish between copy and loan transactions, it is significant that these numbers have decreased. Through access to the OhioLINK central catalog, as well as to individual OhioLINK member catalogs, ownership and availability of holdings is easier to ascertain and more accurate than that available through the OCLC union catalog. This impacts the unfilled rates as the ILL department can search for specific holdings and availability on OhioLINK prior to requesting materials via OCLC. It also reduces OCLC search time for the ILL staff, in that the OCLC number can be extracted from the OhioLINK record. While this may seem oversimplified, it greatly aids the search for appropriate serial records (photocopy requests) which are often cataloged in varying formats resulting in multiple records which may appear as duplicates or not appear in a search at all due to title variations.

It is also significant to note that 1994 was the year of largest expansion for the OhioLINK consortium. Table 2 shows the family tree of OhioLINK by year of implementation. For the purposes of this study, when a parent institution joined OhioLINK, all of its libraries transactions are counted as OhioLINK libraries. For example, the year that Ohio University joined the consortium, the statistics will include figures for not only the main library, but for its law and medical libraries—each OCLC symbol associated with Ohio University is counted as an OhioLINK library. It is also noted that not all of the OhioLINK libraries are OCLC participants, i.e. Lorain Community College. These libraries will not be reflected in the data presented as it has been directly extracted from OCLC reports. The following libraries will be complete installation in 1998: Antioch College, Atheneum of Ohio, Baldwin Wallace College, Bluffton College, Defiance College, University of Findlay, Franciscan University of Steubenville, Heidelberg College, John Carroll University, Malone College, Mount Carmel School of Nursing, Mount Union College, Muskingum College, Otterbein College, Tiffin University, Wilberforce University and Wilmington College.

The institutions appear in the chart with the year of installation or implementation and in alphabetical order within that year. OCLC did not break down statistics by month until July 1997, so it while it would be possible to determine which month a particular institution became an

active OhioLINK participant, it would not be possible to separate that month's statistics from the previous months in any given year, 1989/90 through 1996/97. For this reason, the statistics linked to OhioLINK institutions were mapped to fiscal years in the following manner. If a library became an active participant in OhioLINK in 1994, as did the University of Toledo, then it was considered an OhioLINK institution beginning in the year 1993/94, not 1994/95. While this may add in requests from the 1993 half of the year which are not truly OhioLINK requests, it was thought better to err ahead of time, or the first six months of the fiscal year, when more libraries go live over the less active summer months or fall/winter semester breaks, than to wait and tabulate with the next fiscal year. It was problematic to determine exact onset of OhioLINK membership because of OCLC's method of reporting transactions by fiscal year rather than by month. Local in-house statistics have never been kept by institution name, OCLC holding symbol (or other symbol), or by state/country.

Table 2. OhioLINK Libraries by Year of Implementation

1992	Bowling Green State University Case Western Reserve University Central State University University of Cincinnati Miami University Wright State University
1993	University of Akron Medical College of Ohio Northeastern Ohio Universities College of Medicine Youngstown State University
1994	Central Ohio Technical College Cleveland State University Columbus State Community College Cuyahoga Community College University of Dayton Kent State University Lima Technical College Marion Technical College Muskingum Technical College North Central Technical College Ohio State University Ohio University Shawnee State University Sinclair Community College Southern State Community College Stark Technical College State Library of Ohio University of Toledo
1995	Belmont Technical College Cincinnati State Technical & Community College Clark State Community College Edison State Community College Hocking College Jefferson Community College Lakeland Community College Lorain Community College Oberlin College Ohio Northern University Owens Community College Rio Grande University and Community College Terra Community College

1996	Capital University Cedarville College College of Mount St. Joseph Denison University Kenyon College Mount Vernon Nazarene College Northwest State Community College Ohio Wesleyan University Washington State Community College College of Wooster Xavier University
1997	Hiram College Ohio Dominican College Ursuline College Wittenberg University

Tables 3 and 4 separate the lending and borrowing transactions, while still showing the total OCLC transactions processed by the Interlibrary Loan Department. Borrower transactions are requests borrowed from other libraries for UT patrons, while lender transactions are requests made by other libraries for UT holdings. Total borrowing for loan shows a decline over the past four years, reflecting the impact of pcirc transactions. Borrower copies remain static at first, then reveal a definite increase in the past two years. Total lending transactions are much higher than total borrowing transactions, reflecting the status of UT as a net lender. The University Libraries continue to lend more than they borrow, regardless of the "help" pcirc has provided by shifting some of the workload away from interlibrary loan.

Table 3. Transactions by Borrower and Lender

Total Filled Transactions	Borrower Copies	Lender Copies	Borrower Loans	Lender Loans
1989/90	2728	6844	2476	4318
1990/91	3000	8230	2376	4380
1991/92	2564	8371	2082	4557
1992/93	2753	8154	1965	4631
1993/94*	3274	9858	2495	5035
1994/95	3873	10,468	2593	5067
1995/96	3874	10,499	1506	4343
1996/97	5091	9331	1221	3701
1997/98+	6408	8942	1364	5718

*Statistics for 1993/94 taken from local reports, OCLC reports missing from local archives.
+Statistics for 1997/98 limited to July 1997 through May 1998.

The statistics for Ohio transactions are documented in Table 4. It should be noted that any requests for loans which are determined by the Interlibrary Loan Department to be available through OhioLINK or at one of the three libraries on campus, the request form is returned to the patron with a form letter instructing the patron on how to obtain the material. In addition, there are local restrictions on requests for articles found in electronic journals, due to license agreements and copyright laws. There are no restrictions on the use of Interlibrary Loan by the campus community—from undergraduates to maintenance workers to the administration offices, all employees and students on campus are allowed to submit interlibrary loan requests. Courtesy card holders are not allowed interlibrary loan privileges, but are advised to use the local public library interlibrary loan system. Courtesy card holders are allowed access to pcirc loans via OhioLINK. The loans borrowed in this section are the most dramatic—a drop from 1747 in 94/95 to 171 in 97/98. Lending of loans to UT also shows a decrease from 94/95 through 96/97, but has made a substantial increase in the past fiscal year.

The leveling off of copy requests may be linked to an increasing number of libraries providing access to electronic journals and full text databases. For example, the Toledo-Lucas County Public Library offers full text articles online and additional resources through OPLIN. Copy requests, by nature are more labor intensive than loan requests, and thus have more impact on the workload of the staff. From verification of holdings to verifying that the citation is correct to copying to generating invoices and finally packaging for mailings/fax/ARIEL, processing the copy transaction has more labor intensive steps than pulling a book and packaging it for the mails.

Table 4. Ohio Borrowing and Lending Transactions

OHIO Transactions	Borrower Copies	Lender Copies	Borrower Loans	Lender Loans
1989/90	1773	5333	1642	3122
1990/91	1839	6531	1610	3154
1991/92	1487	6591	1363	3257
1992/93	1699	6465	1423	3565
1993/94*	3911**	11,551**		
1994/95	2654	8331	1747	3706
1995/96	2828	8341	604	2931
1996/97	3700	7166	410	2304
1997/98+	4953	6363	342	3208

*Statistics for 1993/94 taken from local reports, OCLC reports missing from local archives.
**Total borrowing transactions and total lending transactions only—these numbers were not broken down by copy/loan in the local reports for 93/94.
+Statistics for 1997/98 limited to July 1997 through May 1998.

The Ohio transactions were also examined by whether they were requests between OhioLINK libraries and how the transactions were divided by library type: academic, public, or special. This was done to determine if any pattern or relationship between type of transaction exists—OhioLINK or not OhioLINK and if any pattern or relationship between type of library exists as the years progress. A pattern or relationship would indicate that OhioLINK has had some type of impact on the number of transactions or the workload of the Interlibrary Loan Department. Tables 5a and 5b document OhioLINK transactions and clearly shows the impact on the number of loan requests travelling to and from UT to OhioLINK libraries—they significantly decrease each year. Both tables reflect only the years of OhioLINK membership—and since the earliest that membership began was 1992, the tables begin with the 1991/92 fiscal year. The statistics show that as the number of OhioLINK libraries increase, the loan transactions decrease. This exemplifies the success of pcirc and a direct impact on the workload of the interlibrary loan department.

Table 5. Ohio Libraries Borrower Statistics

	Number of OhioLINK Libraries	OhioLINK Copies	Not OhioLINK Copies	OhioLINK Loans	Not OhioLINK Loans
1991/92	8	338	1149	484	1158
1992/93	12	868	831	691	919
1994/95	35	1922	732	1315	432
1995/96	41	2157	671	408	196
1996/97	46	2640	1060	243	167
1997/98	48	3977	976	166	176

*This is the number of OhioLINK libraries generating requests for the designated year.

Table 5a. Percentage of OhioLINK Transactions, Borrower Statistics

	OhioLINK Copies	Total Copy Transactions	Percentage of Total Copy Transactions	OhioLINK Loans	Total Loan Transactions	Percentage of Total Loan Transactions
1991/92	338	1487	22.7	484	1363	35.5
1992/93	868	1699	51.0	691	1423	48.5
1994/95	1922	2654	72.4	1315	1747	75.3
1995/96	2157	2828	76.3	408	604	67.5
1996/97	2640	3700	71.3	243	410	59.3
1997/98	3977	4953	80.3	166	350	47.4

Table 6. Ohio Libraries Lender Statistics

	Number of OhioLINK Libraries	OhioLINK Copies	Not OhioLINK Copies	OhioLINK Loans	Not OhioLINK Loans
1991/92	10	1460	5131	660	2597
1992/93	12	1794	4671	789	2776
1994/95	38	4648	3683	1274	2432
1995/96	46	6456	1885	1040	1891
1996/97	51	5865	1301	514	1790
1997/98	58	5523	840	994	2214

*This is the number of OhioLINK libraries generating requests for the designated year.

Table 6a. Percentage of OhioLINK Libraries, Lender Statistics

	OhioLINK Copies	Total Ohio Copy Transactions	Percentage of Total Copy Transactions	OhioLINK Loans	Total Ohio Loan Transactions	Percent of Total Loan Transactions
1991/92	1460	6591	22.1	660	3257	20.3
1992/93	1794	6465	27.7	789	3565	22.1
1994/95	4648	8331	55.8	1274	3706	34.4
1995/96	6456	8341	77.4	1040	2931	35.5
1996/97	5865	7166	81.8	514	2304	22.3
1997/98	5523	6363	86.6	994	3208	30.9

Table 7 shows Ohio transactions divided by library type. Table 7 varies from the other tables in that it does not document number of transactions, but number of libraries requesting or lending. This difference was intentional to determine if a pattern or relationship would reveal that lending/requesting patterns with academic libraries decreased, particularly due to the impact of OhioLINK procedures such as pcirc. The results of Table 7 do not reveal any pattern changes since OhioLINK implementation—the figures for academic, public and special libraries remain consistent throughout the eight year period. It is not surprising that academic libraries would interact more with each other in interlibrary loan, as their collections reflect the educational missions of the parent institutions, and the academic patrons' research and informational needs have more commonalties than those of academic and public library patrons. Special libraries are the second most frequent borrower/lender, and as they often have research and development informational needs, special library patrons requests are more suited to the technical and scholarly holdings of the academic library than the popular holdings of the public library.

Table 7. Library Type Generating Transactions in Ohio

(By Number of Libraries Generating or Filling Transactions)

Borrower	Academic	Public	Special	Lender	Academic	Public	Special
1989/90	60	22	18	**1989/90**	75	20	48
1990/91	59	18	22	**1990/91**	68	24	50
1991/92	60	17	19	**1991/92**	75	25	49
1992/93	62	24	25	**1992/93**	73	25	46
1994/95	65	30	26	**1994/95**	86	26	53
1995/96	58	18	22	**1995/96**	83	27	53
1996/97	66	22	24	**1996/97**	78	24	49
1997/98	69	19	22	**1997/98**	86	26	41

Another view of the impact of OhioLINK upon interlibrary loan is to determine if other, outside institutions have increased in proportion of requests as OhioLINK library requests decrease—or if there is any relationship is evident. Two tables were created from the non-Ohio data: regional and total non-Ohio transactions. The regional data was extracted from the following states: Indiana, Kentucky, Michigan, New York, Pennsylvania, and West Virginia. Regional data was studied for two reasons: 1) the less the turnaround time for transactions, the quicker the materials arrive for the patrons' use—regional or closer libraries are chosen for quick turnaround time, and reciprocal agreements are more likely to exist with regional libraries than with those farther away, whom the library is less apt to interact with; and 2) from the sheer volume of transactions the Carlson Library Interlibrary Loan Department fills each year, it was more efficient to restrict the focus and dissect the composition of just the regional transactions rather than all of the transactions filled. One of the premises to be evaluated was whether outside libraries may be utilizing the OhioLINK central catalog rather than the OCLC union catalog to determine ownership and availability—and it was considered that the contiguous states may be more influenced to use the central catalog as "neighbors" often know more about what is happening next door than three blocks away, thus the contiguous states may be more aware of the catalog's existence and its potential to aid their interlibrary loan searches. While the numbers can not interpret central catalog use, an increase in the transaction numbers of the

contiguous states consistent with the increase of numbers of OhioLINK libraries may indicate that the catalog is being used by outsiders and warrants further study of how it impacts institutions outside of Ohio.

Table 8 documents the transaction flow with states near Ohio. As previously stated, interaction and resource sharing agreements with those institutions physically closer diminishes turnaround processing time due to less distance to travel. The regional statistics reflect the pattern of more transactions processed than total non-Ohio transactions. It does show that the numbers of transactions continue steadily—which reveal that the need for interlibrary loan services has not diminished as other states implement consortiums, programs, and services similar to OhioLINK. The numbers may change in the future as other states replicate OhioLINK services.

Table 8. Regional Transactions: Indiana, Kentucky, Michigan, New York, Pennsylvania, West Virginia

Borrower			Lender		
Regional	Copy	Loan	Regional	Copy	Loan
1989/90	604	342	1989/90	1151	668
1990/91	754	331	1990/91	1254	780
1991/92	754	337	1991/92	1301	815
1992/93	722	255	1992/93	1167	603
1994/95	779	379	1994/95	1745	790
1995/96	607	325	1995/96	1591	793
1996/97	830	330	1996/97	1563	769
1997/98	936	462	1997/98	2032	1366

Note that the percentage of copy requests filled decreases from the onset of the OhioLINK (1992) through the current fiscal year. The percentage of total transactions for copies drops from 22.1 to 14.6%, or approximately 8%. The percentage of loan requests increases at the beginning of the decade, drops sharply in 1991/92, then continues to increase. Loans rise from 13.8 to 34%, which is a 21% increase. The loan requests, particularly in the OhioLINK years of 92-98, double for regional borrowing.

Table 8a. Percentages of Regional Borrowing of the Total Transactions

Borrower Regional	Copy	Total Copy	Percent	Loan	Total Loan	Percent
1989/90	604	2728	22.1	342	2476	13.8
1990/91	754	3000	25.1	331	2376	13.9
1991/92	754	2564	29.4	337	2082	16.2
1992/93	722	2753	26.2	255	1965	13.0
1994/95	779	3873	20.1	379	2593	14.6
1995/96	607	3874	15.6	325	1506	21.6
1996/97	830	5091	16.3	330	1221	27.0
1997/98	936	6408	14.6	462	1364	34.0

The lender regional data does not display the obvious patterns seen in the borrower regional data. Overall, there are increases in both copy and loans at the beginning and end of the decades with a slump for both in the mid-nineties. Neither the figures for regional borrowing or lending support the statement that institutions outside of OhioLINK have picked up the "slack" left by the migration of OhioLINK transactions to pcirc and Power Pages and the jurisdiction of the Circulation Department. The data of lending transactions shows an 8% increase in the percentage of loan transactions filled over the years, from 15.5% to 23.8%. The fiscal years of 1992/93 and 1994/95 do reveal a temporary decrease in transactions, as the increase pattern continues with the next fiscal year—and even 1994/95 is higher than 1992/93. Copy transactions appear more stable—in the mid teens as percentages of the total transactions until 1997/98, when a 6% increase occurs.

Table 8b. Percentages of Regional Lending of the Total Transactions

Lender Regional	Copy	Total Copy	Percent	Loan	Total Loan	Percent
1989/90	1151	6844	16.8	668	4318	15.5
1990/91	1254	8230	15.2	780	4380	17.8
1991/92	1301	8371	15.5	815	4557	17.8
1992/93	1167	8154	14.3	603	4631	13.0
1994/95	1745	10,468	16.6	790	5067	15.6
1995/96	1591	10,499	15.1	793	4343	18.2
1996/97	1563	9331	16.7	769	3701	20.7
1997/98	2032	8942	22.7	1366	5718	23.8

The regional library composition is much the same as the Ohio library composition: mainly academic, followed by special library, and as a distant third, the public library. The same explanation suffices for this composition as for the Ohio transactions. Also, it should be remembered that this statistics were generated from OCLC, which began as the Ohio College Library Center—an intentional focus to the academic world. Early members of OCLC were academic libraries, as were earliest users of the OCLC Interlibrary Loan Subsystem. Those special libraries with larger budgets to manage the expense of OCLC are reflected prominently in the statistics. Also, it is the larger metropolitan public libraries and regional public library systems which are reflected in the public library statistics. Table 9 reflects the number of libraries per library type, not the number of transactions per library type.

Table 9. Regional Library Composition, 1989/90-1997/98 Inclusive

	Academic	Public	Special	Totals
Indiana	388	91	64	543
Kentucky	132	4	9	145
Michigan	467	61	164	692
New York	479	38	124	641
Pennsylvania	597	83	113	793
West Virginia	102	0	21	123
Totals	2165	277	495	2937

Tables 10 and 11 document the number of transactions filled by the type of library: academic, public or special. Just as most of the libraries requesting materials are academic libraries, most of the loan and copy requests are filled by academic libraries. Again, special libraries place second and public place third in position for the number of transactions processed. Copies in the overall Borrower statistics have seen an increase over the years, with an exception in the 1995/96 fiscal year. Loans for the Borrower statistics have not seen any major upward or downward swings, but have experienced a modest increase over the years. Academic libraries have increased the number of transactions over the years, while both public and special remain relatively constant.

Table 10. Regional Borrower Library Type, Copies and Loans

	1989/90	1990/91	1991/92	1992/93	1994/95	1995/96	1996/97	1997/98
Borrower	Copies	Copies	Copies	Copies	Copies	Copies	Copies	Copies
Academic	468	616	630	566	601	471	706	760
Public	50	59	62	35	72	44	47	27
Special	86	79	62	121	106	92	77	92
Totals	604	754	754	722	779	607	830	879
	1989/90	1990/91	1991/92	1992/93	1994/95	1995/96	1996/97	1997/98
Borrower	Loans	Loans	Loans	Loans	Loans	Loans	Loans	Loans
Academic	291	307	302	224	341	285	301	399
Public	37	21	24	25	31	25	22	18
Special	14	3	11	6	7	15	7	5
Totals	342	331	337	255	379	325	330	412

The Lender activity for regional libraries is documented in Table 11. The Lender statistics reveal overall upward trends in both copy and loan transactions. As with the Borrower statistics, the majority of transactions are filled by the academic library, regardless of type of request. Copies have increased the most over the time period studied. Substantial increase is noted for the 1997/98 fiscal year in both copies and loans for the academic libraries. The public library type pattern of highs and lows remains constant until 1997/98, when a drop in copies and rise in loans occurs. Special libraries experience a decline in copies beginning in 1994/95, while their loan transactions are fairly stable until 1997/98 when a sharp increase is visible.

Table 11. Regional Lender Library Type, Copies and Loans

	1989/90	1990/91	1991/92	1992/93	1994/95	1995/96	1996/97	1997/98
Lender	Copies	Copies	Copies	Copies	Copies	Copies	Copies	Copies
Academic	980	1092	1171	1028	1586	1457	1481	1990
Public	16	22	25	23	14	25	12	7
Special	155	140	105	116	145	109	70	34
Totals	1151	1254	1301	1167	1745	1591	1563	2031
	1989/90	1990/91	1991/92	1992/93	1994/95	1995/96	1996/97	1997/98
Lender	Loans	Loans	Loans	Loans	Loans	Loans	Loans	Loans
Academic	487	607	613	453	665	652	633	1101
Public	76	74	110	62	61	69	77	112
Special	105	99	92	88	64	72	59	153
Totals	668	780	815	603	790	793	769	1366

Tables 12 though 14 document all non-Ohio transactions, borrower and lender. Overall, the most dramatic trend is the increase in loan activity in the borrower transactions seen in Table 13. Copy transactions drop after the implementation of OhioLINK (1992), but have experienced an increase in the current fiscal year, 1997/98.

Table 12. Total Non-Ohio Transactions

Borrower			Lender		
Non-Ohio	Copy	Loan	Non-Ohio	Copy	Loan
1989/90	955	827	1989/90	1511	1196
1990/91	1171	777	1990/91	1689	1220
1991/92	1076	711	1991/92	1780	1300
1992/93	1054	542	1992/93	1665	1045
1994/95	1174	803	1994/95	2307	1349
1995/96	1046	902	1995/96	2153	1403
1996/97	1364	810	1996/97	2156	1378
1997/98	2431	1193	1997/98	2579	2510

Table 13. All Non-Ohio Borrower Statistics

Non-Ohio Transactions	Copy	Total Copy	Percent of Total	Loan	Total Loan	Percent of Total
1989/90	955	2728	35.0	827	2476	33.4
1990/91	1171	3000	39.0	777	2376	32.7
1991/92	1076	2564	42.0	711	2082	34.1
1992/93	1054	2753	38.2	542	1965	27.6
1994/95	1174	3873	30.3	803	2593	30.9
1995/96	1046	3874	27.0	902	1506	60.1
1996/97	1364	5091	26.8	810	1221	66.3
1997/98	2431	6408	38.3	1193	1364	87.5

The lender statistics for copies for all non-Ohio transactions are stable, never varying more than 3%, again with an exception in the rise in 1997/98 of 5%. The total non-Ohio loan transactions increase 16.2%, from 27.7 to 43.9% of total loan transactions. Increases are larger from year to year following OhioLINK implementation (1992).

Table 14. All Non-Ohio Lender Statistics

Non-Ohio Transactions	Copy	Total Copy	Percent of Total	Loan	Total Loan	Percent of Total
1989/90	1511	6844	22.1	1196	4318	27.7
1990/91	1689	8230	20.5	1220	4380	27.8
1991/92	1780	8371	21.3	1300	4557	28.5
1992/93	1665	8154	20.4	1045	4631	22.5
1994/95	2307	10,468	22.0	1349	5067	26.6
1995/96	2153	10,499	20.5	1403	4343	32.3
1996/97	2156	9331	23.1	1378	3701	37.2
1997/98	2579	8942	28.8	2510	5718	43.9

V. Conclusion

This study was performed to determine if traditional interlibrary loan functions were on the verge of extinction, due to the resource sharing options offered through OhioLINK. The methodology used was to locate OCLC reports for the fiscal years 1989/90 through 1997/98 to study the flow of incoming and outgoing requests. The time span begins in the year that the University of Toledo automated with the NOTIS system, and ends with the present fiscal year statistics (excepting June 1998). As the University Libraries became a part of OhioLINK in 1994, the time span provides a historical overview of what was happening both before and after implementation.

The first question to be answered was if the total number of transactions had experienced any change since the implementation of OhioLINK. The answer to this query is that the total transactions have not decreased significantly from 1989/90 through 1997/98. Photocopy transactions have increased and loans have decreased, but total loans and copies have decreased only .25% or by 594 transactions. This does not reflect a significant impact on total transactions.

The second question concerned the requests by Ohio libraries: total Ohio transactions, breakdowns of copy and loan transactions, and by library type. These will be discussed separately, by borrower and lender transactions.

Ohio borrower statistics overall display dramatic changes in both copy and loan transactions. Total copy transactions have increased from 1487 in 1991/92 to 4953 in 1997/98. The total percentage of OhioLINK libraries generating copy transactions rises from 22.7% to 80.3% in the same time period. Total Ohio loan transactions have decreased from 1363 in 1991/92 to 350 in 1997/98. The total OhioLINK loan transactions in 1991/92 reflect 35.5% of the total Ohio loan transactions—which rises in 1997/98 to 47.4% of the total Ohio loan transactions.

Total Ohio lender transactions, at first glance, do not display dramatic differences in transaction numbers for either copy or loans. The total Ohio copy transactions in 1991/92 was 6591, and in 1997/98 was 6363. The dramatic difference was in the percentage of copy transactions with OhioLINK libraries. In 1991/92, OhioLINK copies made up 22.1% of the total

transactions, which increases in 1997/98 to 86.6% of the OhioLINK transactions. Total Ohio loan transactions number 3257 in 1991/92, and in 1997/98 were 3208. The percentage of OhioLINK loans increases from 20.3% in 1991/92 to 30.9% in 1997/98. While not as significant as the copy increase, it is significant when considered that materials available through pcirc are not allowed to be requested via interlibrary loan. OhioLINK has had great impact on the copy transaction component of interlibrary loan workload—especially as it requires more labor to process than a loan transaction. OhioLINK has not had as great an impact on the loan transactions, but neither has it reduced the percentage of loans processed by the department for OhioLINK libraries—in fact it has increased 10%.

The Ohio transactions by library type does not substantially vary over the years. The majority of transactions take place with academic libraries, followed by special libraries, with public libraries trailing in third place.

The last topic addressed in the study was the impact of OhioLINK upon transactions from libraries outside of Ohio. The first part of this section studied the "regional" libraries around Ohio: Indiana, Kentucky, Michigan, New York, Pennsylvania, and West Virginia. The regional library composition mirrored that of Ohio in the number of libraries and number of requests by the library type: academic—first , special—second , and public—third. Also, regardless of borrower or lender transaction, the numbers of both copy and loan requests increase from the regional libraries. As the academic libraries show the largest numbers, it may be a point of further study to determine how they selected UT—through the use of OCLC or through the use of OhioLINK's central catalog.

The total of non-Ohio borrowing and lending transactions were studied to determine if OhioLINK implementation has impacted the numbers of transactions processed by UT. In both areas, copy and loans have experienced increases. Non-Ohio copy borrowing increased from 955 to 2431 transactions. Non-Ohio loan borrowing increased from 827 to 1193 transactions. Non-Ohio copy lending increased from 1511 to 2579 transactions, while loans increased from 1196 to 2510 transactions. The most dramatic increase of all the non-Ohio statistics was in the percent of loans in the borrowing function, an increase of more than 50%.

In conclusion, the impact of OhioLINK resource sharing options has not lessened the workload or the number of interlibrary loan transactions processed by the department. It has altered the composition so that copy requests exceed loan requests for Ohio transactions, while non-Ohio transactions show increases in both types of transactions over the years studied. The types of libraries requesting and lending materials have not changed significantly over the years—it is still dominated by the academic library. Likewise, there have been no significant changes in the numbers of requests by library type—no significant increase or decrease solely by library type, although an overall trend of increases in both copies and loans exists.

The role of traditional interlibrary loan will continue to be a viable and necessary part of the Carlson Library. From the data, it is clear to see that changes have occurred—that photocopy services have begun to dominate transactions within the state of Ohio. Carl Uncover, a document delivery service, is presently under testing at UT. It will be of interest to study its impact on the department, as well as the continuation and improvement of resource sharing services offered through OhioLINK.

As lifelong learning is essential to maintain skills and knowledge in librarianship, evaluating services, such as interlibrary loan and OhioLINK resource sharing, is essential to maintain a superior level of service to library patrons, and to the citizens of Ohio who support the efforts of librarians through their tax dollars. Evaluating and studying what is done in daily tasks and how it is done helps to understand what works and what fails, and provides incentives for improvement. It is hoped to expand this study in the future to dissect OhioLINK requests further, especially loans—and also to study if libraries outside of OhioLINK utilize the central catalog, and if they do, how they use it.

Bibliography

Barnett, Michael S., Rodney C. Bruce, Dale K. Carrison, et al. "MSUS/PALS: Building a Regional Information Infrastructure." *Library Hi Tech*, 12, no. 1 (1994):7-34.

Campbell, Bonnie. "OPLIN: The Ontario Public Library Information Network." *Canadian Library Journal*, 45, no.5 (1988):277-79.

Cornish, Graham P. "The Impact of Networking on International Interlibrary Loan and Document Supply." *Libri*, 41 (1991):272-88.

Devenish-Cassell, Ann. "Electronic Impacts on Library Resource Sharing: A Case Study." *Catholic Library World*, 57 (1986):221-24.

Dunn, Dana. "Libraries of Tomorrow: University of Cincinnati." *Computers in Libraries*, 13, no. 1 (1993):14-15.

Eronina, Elena A. and Vladimir V. Komov. "ILL System in the Network of Research and Sci-Tech Libraries of the FSU: Problems and Perspectives." *INSPEL*, 28, no. 2 (1994):282-90.

Flonders, Bruce L. "KICNET: Interlibrary Loan on a Wide-Area Network in Kansas." *Online*, 15, no. 2 (1991):55-60.

Fong, Yem S. "The Value of Interlibrary Loan: An Analysis of Customer Satisfaction Survey Comments." *Journal of Library Administration*, 23, no. 1-2 (1996):43-54.

Geiser, Cherie and Rachel Miller. "GMRLC Negotiations for an Interstate Courier: History, Results, and Trends." *Journal of Library Administration*, 23, no. 1-2 (1996):5-22.

Hirshon, Arnold. "Library Strategic Alliances and the Digital Library in the 1990s: The OhioLINK Experience." *Journal of Academic Librarianship*, 21 (1995):383-86.

Kinnucan, Mark T. "Demand for Document Delivery and Interlibrary Loan in Academic Settings." *Library & Information Science Research*, 15 (1993):355-74.

Kohl, David. "OhioLINK: A Vision for the 21st Century." *Library Hi Tech*, 12, no. 3 (1994):29-34.

Levene, Lee-Allison and Wayne Pedersen. "Patron Satisfaction at Any Cost?" *Journal of Library Administration*, 23, no. 1-2 (1996):55-71.

MacDougall, A.F., H. Wheelhouse, and J.M. Wilson. "Effectiveness of a Local Inter-Loan System for Five Academic Libraries: An Operational Research Approach." *Journal of Documentation*, 46 (1990):353-58.

Mallory, Jim. "Public Libraries Go Online." *Link-Up*, 8, no. 5 (1991):1,12.

Medina, Sue O. "The Network of Alabama Academic Libraries." *College & Research Libraries News*, 51, no. 7 (1990):640-43.

Medina, Sue O. and William C. Highfill. "Promises and Perils for Traditional Interlibrary Loan Services." In *Advances in Collection Development and Resource Management*,v.2, 27-47. Greenwich, Conn.: JAI Press, 1996.

"Michigan Research Libraries Triangle Reports Progress in Second Year." *Information Today*, 11, no. 10 (1994): 48.

"Pacific Northwest Libraries Implement INN-Reach." *Information Today*, 14, no. 6 (1997):65.

Paine, Nancy E. and John Ward. "Changing Workloads and Productivity in Interlibrary Loan." *Journal of Library Administration*, 23, no. 1-2 (1996):73-93.

Preece, Barbara G. and Susan Logue. "Empowering the Patron: Redesigning Interlibrary Loan Services." *Journal of Library Administration*, 23, no. 1-2 (1996):155-66.

Sessions, Judith A., Richard N. Pettit, Jr. and Scott Van Dam. "OhioLINK Inter-Institutional Lending Online: The Miami University Experience." *Library Hi Tech*, 13, no. 3 (1995):11-38.

Van Dam, Scott, Jennifer Block and Richard N. Pettit, Jr. "The Impact of the OhioLINK Network on Traditional Interlibrary Loan." *Journal of Interlibrary Loan, Document Delivery & Information Supply*, 8, no. 1 (1997):1-19.